TORQ Analysis of Maintenance Workers, Machinery to Welders, Cutters, and Welder Fitters

INPUT SECTION:

Transfer	Title	O*NET	Filters		
From Title:	Maintenance Workers, Machinery	49-9043.00	Abilities:	Importance LeveL: 50	Weight: 1
To Title:	Welders, Cutters, and Welder Fitters	51-4121.06	Skills:	Importance LeveL: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

OUTPUT SECTION:

Grand TORQ: 91

Ability TORQ	Skills TORQ	Knowledge TORQ
Level 94	Level 85	Level 93

Gaps To Narrow if Possible

Ability	Level	Gap	Impt
Arm-Hand Steadiness	51	5	75
Near Vision	50	4	65
Visualization	51	5	50
Oral Expression	50	4	56
Multilimb Coordination	44	3	56
Manual Dexterity	46	2	62

Upgrade These Skills

Skill	Level	Gap	Impt
No Skills Upgrade Required!			

Knowledge to Add

Knowledge	Level	Gap	Impt
No Knowledge Upgrades Required!			

LEVEL and IMPT (IMPORTANCE) refer to the Target Welders, Cutters, and Welder Fitters. GAP refers to level difference between Maintenance Workers, Machinery and Welders, Cutters, and Welder Fitters.

ASK ANALYSIS

Ability Level Comparison - Abilities with importance scores over 50

Description	Maintenance Workers, Machinery	Welders, Cutters, and Welder Fitters	Importance
Arm-Hand Steadiness	46	51	75
Near Vision	46	50	65
Manual Dexterity	44	46	62
Control Precision	48	44	62
Oral Expression	46	50	56
Problem Sensitivity	42	39	56

Finger Dexterity	44	42	56
Multilimb Coordination	41	44	56
Oral Comprehension	50	46	53
Visualization	46	51	50
Selective Attention	44	44	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Maintenance Workers, Machinery	Welders, Cutters, and Welder Fitters	Importance

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Maintenance Workers, Machinery	Welders, Cutters, and Welder Fitters	Importance

Experience & Education Comparison

Related Work Experience Comparison

Description	Maintenance Workers, Machinery	Welders, Cutters, and Welder Fitters
10+ years	0%	1%
8-10 years	3%	1%
6-8 years	0%	0%
4-6 years	10%	0%
2-4 years	10%	17%
1-2 years	48%	23%
6-12 months	5%	28%
3-6 months	10%	6%
1-3 months	0%	1%
0-1 month	0%	6%
None	9%	11%

Required Education Level Comparison

Description	Maintenance Workers, Machinery	Welders, Cutters, and Welder Fitters
Doctoral	0%	0%
Professional Degree	0%	0%
Post-Masters Cert	0%	0%
Master's Degree	0%	0%
Post-Bachelor Cert	0%	0%
Bachelors	2%	0%
AA or Equiv	0%	0%
Some College	6%	8%
Post-Secondary Certificate	25%	26%
High Scool Diploma or GED	64%	26%
No HSD or GED	0%	38%

Maintenance Workers, Machinery	Welders, Cutters, and Welder Fitters
Most Common Educational/Training Requirement:	
Short-term on-the-job training	Long-term on-the-job training
Job Zone Comparison	
1 - Job Zone One: Little or No Preparation Needed	2 - Job Zone Two: Some Preparation Needed
No previous work-related skill, knowledge, or experience is needed for these occupations. For example, a person can become a cashier even if he/she has never worked before.	Some previous work-related skill, knowledge, or experience may be helpful in these occupations, but usually is not needed. For example, a teller might benefit from experience working directly with the public, but an inexperienced person could still learn to be a teller with little difficulty.
These occupations may require a high school diploma or GED certificate. Some may require a formal training course to obtain a license.	These occupations usually require a high school diploma and may require some vocational training or job-related course work. In some cases, an associate's or bachelor's degree could be needed.
Employees in these occupations need anywhere from a few days to a few months of training. Usually, an experienced worker could show you how to do the job.	Employees in these occupations need anywhere from a few months to one year of working with experienced employees.

Tasks

Maintenance Workers, Machinery

Core Tasks

Generalized Work Activities:

- Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.
- Controlling Machines and Processes - Using either control mechanisms or direct physical activity to operate machines or processes (not including computers or vehicles).
- Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.
- Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
- Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials.

Specific Tasks

Occupation Specific Tasks:

- Clean machines and machine parts, using cleaning solvents, cloths, air guns, hoses, vacuums, or other equipment.
- Collaborate with other workers to repair or move machines, machine parts, or equipment.
- Collect and discard worn machine parts and other refuse in order to maintain machinery and work areas.
- Dismantle machines and remove parts for repair, using hand tools, chain falls, jacks, cranes, or hoists.
- Inspect or test damaged machine parts, and mark defective areas or advise supervisors of repair needs.
- Install, replace, or change machine parts and attachments, according to production specifications.
- Inventory and requisition machine parts, equipment, and other supplies so that stock can be maintained and replenished.
- Lubricate or apply adhesives or other materials to machines, machine parts, or other equipment, according to specified procedures.
- Measure, mix, prepare, and test chemical solutions used to clean or repair machinery and equipment.
- Read work orders and specifications to

Welders, Cutters, and Welder Fitters

Core Tasks

Generalized Work Activities:

- Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
- Identifying Objects, Actions, and Events - Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.
- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Evaluating Information to Determine Compliance with Standards - Using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards.

Specific Tasks

Occupation Specific Tasks:

- Adjust electric current and timing cycles of resistance welding machines to heat metals to bonding temperature.
- Align and clamp workpieces together, using rules, squares, or hand tools, or position items in fixtures, jigs, or vises.
- Brush flux onto joints of workpieces or dip braze rods into flux, to prevent oxidation of metal.
- Clean equipment parts, such as tips of soldering irons, using chemical solutions or cleaning compounds.
- Clean joints of workpieces with wire brushes or by dipping them into cleaning solutions.
- Clean workpieces to remove dirt and excess acid, using chemical solutions, files, wire brushes, or grinders.
- Connect hoses from torches to regulator valves and cylinders of oxygen and specified gas fuels.
- Cut carbon electrodes to specified sizes and shapes, using cutoff saws.
- Dip workpieces into molten solder, or place solder strips between seams and heat seams with irons, to bond items together.
- Examine seams for defects, and rework defective joints or broken parts.
- Grind, cut, buff, or bend edges of

- Read work orders and specifications to determine machines and equipment requiring repair or maintenance.
- Reassemble machines after the completion of repair or maintenance work.
- Record production, repair, and machine maintenance information.
- Remove hardened material from machines or machine parts, using abrasives, power and hand tools, jackhammers, sledgehammers, or other equipment.
- Replace or repair metal, wood, leather, glass, or other lining in machines, or in equipment compartments or containers.
- Replace, empty, or replenish machine and equipment containers such as gas tanks or boxes.
- Set up and operate machines, and adjust controls to regulate operations.
- Start machines and observe mechanical operation to determine efficiency and to detect problems.
- Transport machine parts, tools, equipment, and other material between work areas and storage, using cranes, hoists, or dollies.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- apply cleaning solvents
- assist mechanic, or extractive or construction trades craft worker
- clean equipment or machinery
- clean rooms or work areas
- construct, erect, or repair wooden frameworks or structures
- cut, shape, fit, or join wood or other construction materials
- erect scaffold
- fabricate sheet metal parts or items
- fabricate, assemble, or disassemble manufactured products by hand
- inspect machinery or equipment to determine adjustments or repairs needed
- install equipment or attachments on machinery or related structures
- inventory stock to ensure adequate supplies
- load or unload material or workpiece into machinery
- lubricate machinery, equipment, or parts
- maintain or repair industrial or related equipment/machinery
- maintain repair records
- mix paint, ingredients, or chemicals, according to specifications
- move materials or goods between work

workpieces to be joined to ensure snug fit, using power grinders and hand tools.
- Guide torches and rods along joints of workpieces to heat them to brazing temperature, melt braze alloys, and bond workpieces together.
- Heat soldering irons or workpieces to specified temperatures for soldering, using gas flames or electric current.
- Melt and apply solder along adjoining edges of workpieces to solder joints, using soldering irons, gas torches, or electric-ultrasonic equipment.
- Melt and apply solder to fill holes, indentations, and seams of fabricated metal products, using soldering equipment.
- Melt and separate brazed or soldered joints to remove and straighten damaged or misaligned components, using hand torches, irons or furnaces.
- Place solder bars into containers, and turn knobs to specified positions to melt solder and regulate its temperature.
- Remove workpieces from fixtures, using tongs, and cool workpieces, using air or water.
- Remove workpieces from molten solder and hold parts together until color indicates that solder has set.
- Select torch tips, flux, and brazing alloys from data charts or work orders.
- Smooth soldered areas with alternate strokes of paddles and torches, leaving soldered sections slightly higher than surrounding areas for later filing.
- Sweat together workpieces coated with solder.
- Turn dials to set intensity and duration of ultrasonic impulses, according to work order specifications.
- Turn valves to start flow of gases, and light flames and adjust valves to obtain desired colors and sizes of flames.

Detailed Tasks

Detailed Work Activities:

- adjust welding equipment
- apply cleaning solvents
- apply flux to workpiece before soldering or brazing
- braze metal parts or components together
- clean or degrease weld, or parts to be welded or soldered
- examine products or work to verify conformance to specifications
- fabricate, assemble, or disassemble manufactured products by hand
- file, sand, grind, or polish metal or plastic objects
- identify properties of metals for repair or fabrication activities

- move materials or goods between work areas
- move or fit heavy objects
- observe or listen to machinery or equipment operation to detect malfunctions
- operate crane in construction, manufacturing or repair setting
- operate hoist, winch, or hydraulic boom
- operate sandblasting equipment
- operate vacuum or air hose
- perform safety inspections in industrial, manufacturing or repair setting
- read specifications
- read work order, instructions, formulas, or processing charts
- repair or replace malfunctioning or worn mechanical components
- repair sheet metal products
- requisition stock, materials, supplies or equipment
- signal directions or warnings to coworkers
- test materials or solutions
- test mechanical products or equipment
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use basic carpentry techniques
- use control or regulating devices to adjust or maintain industrial machinery
- use hand or power tools
- use hand or power woodworking tools
- use high voltage apparatus
- use knowledge of metric system
- use measuring devices in repairing industrial or heavy equipment
- use pneumatic tools
- use precision measuring devices in mechanical repair work
- use pressure gauges
- work as a team member

Technology - Examples

Data base user interface and query software
- Database software

Spreadsheet software
- Spreadsheet software

Word processing software
- Word processing software

Tools - Examples

- Abrasive wheels

- load or unload material or workpiece into machinery
- monitor the quantity of assembly output
- move or fit heavy objects
- perform safety inspections in industrial, manufacturing or repair setting
- position, clamp or assemble workpiece prior to welding
- preheat metal before welding, brazing, or soldering
- read blueprints
- read production layouts
- read technical drawings
- read work order, instructions, formulas, or processing charts
- sharpen metal objects
- solder metal parts or components together
- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use braze-welding equipment
- use hand or power tools
- use soldering equipment

Technology - Examples

Analytical or scientific software
- Scientific Software Group Filter Drain FD

Calendar and scheduling software
- OmniFleet Equipment Maintenance Management

Computer aided design CAD software
- EZ Pipe software

Project management software
- Recordkeeping software

Tools - Examples

- Wrenches
- Anvils
- Bandsaws
- Slitters
- Motorized cutting torches
- Calipers
- Desktop computers
- Underwater electrode holders
- Files
- Gas flow measurement instruments

- Abrasive rubbing stones
- Adjustable widemouth pliers
- Adjustable wrenches
- Bandsaws
- Oxyacetylene torches
- Dial calipers
- Compressed air guns
- Deburring tools
- Dollies
- Drill bits
- Ear plugs
- Forklifts
- Dial indicators
- Grease guns
- Lapping equipment
- Hammers
- Hard hats
- Chain falls
- Hold down clamps
- Jacks
- Ladders
- Lathes
- Levels
- Lockout hasps
- Metal cutters
- Metal inert gas MIG welders
- Micrometers
- Milling machines
- Personal computers
- Plumb bobs
- Jackhammers
- Buffing machines
- Power drills
- Forklifts
- Current converters
- Brazing equipment
- Goggles
- Grinding machinery
- Hand chipping hammers
- Clamps
- Temperature measurement instruments
- Electric overhead hoists
- Hydraulic presses
- Impact wrenches
- Hydraulic jacks
- Ladders
- Laser printers
- Laser welders
- Lathes
- Levels
- Light trucks
- Hydraulic truck lifts
- Metal inert gas MIG welders
- Metal markers
- Punches
- Computerized numerical control CNC programmable welding robot controllers
- Micrometers
- Milling machines
- Nibblers
- Personal computers
- Pipe cutters
- Plasma welders
- Air drills
- Air chisels
- Air scalers

- Grinding machines
- Bench saws
- Punches
- Reamers
- Respirators
- Rivet guns
- Rulers
- Safety glasses
- Safety belts
- Hacksaws
- Scaffolding
- Screwdrivers
- Shears
- Rigging equipment
- Socket wrench sets
- Soldering guns
- Steel rules
- Sheet metal folders
- Dies
- Pipe threaders
- Tungsten inert gas TIG welding equipment
- Industrial vacuums
- Arc welders
- Welding tips
- Spot-welding equipment
- Workshop cranes
- Brakes

- Buffers
- Power chippers
- Power drills
- Power grinders
- Cutoff saws
- Steamers
- Waterproof gloves
- Angle finders
- Pinchbars
- Comealongs
- Ratchets
- Self-contained breathing equipment
- Respirator hose masks
- Welding lenses
- Scaffolding
- Scribers
- Shears
- Socket sets
- Soldering irons
- Wire feed rate measurement instruments
- Squares
- Straightedges
- Metal benders
- Dies
- Fillet weld gauges
- Electric pipe threaders
- Hand pipe threaders
- Tungsten inert gas TIG welding equipment
- Two way radios
- Ultrasonic welding equipment
- Arc voltage measurement instruments
- Arc welders
- Underwater electrodes

- Direct current DC sources
- Face shields
- Welding tips
- Welding robots
- Rod ovens
- Electrode wires
- Dive suits
- Winches
- Power wire brushes
- Wire cutters
- Overhead cranes
- Brakes

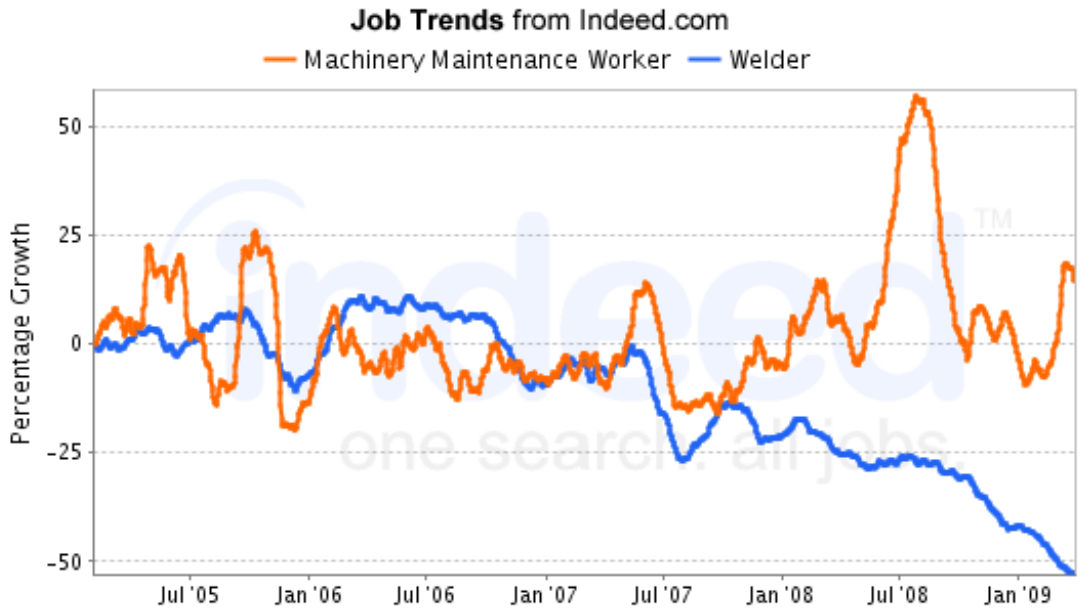
Labor Market Comparison

Description	Maintenance Workers, Machinery	Welders, Cutters, and Welder Fitters	Difference
Median Wage	$ 34,100	$ 38,030	$ 3,930
10th Percentile Wage	$ 18,630	$ 22,680	$ 4,050
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	$ 38,610	$ 46,190	$ 7,580
90th Percentile Wage	$ 43,370	$ 50,780	$ 7,410
Mean Wage	$ 32,410	$ 38,260	$ 5,850
Total Employment - 2007	290	1,610	1,320
Employment Base - 2006	337	1,691	1,354
Projected Employment - 2016	278	1,816	1,538
Projected Job Growth - 2006-2016	-17.5 %	7.4 %	24.9 %
Projected Annual Openings - 2006-2016	5	49	44

National Job Posting Trends

Trend for Maintenance Workers, Machinery

Trend for Welders, Cutters, and Welder Fitters



Data from Indeed

Recommended Programs

Welder/Welding Technologist

Welding Technology/Welder. A program that prepares individuals to apply technical knowledge and skills to join or cut metal surfaces. Includes instruction in arc welding, resistance welding, brazing and soldering, cutting, high-energy beam welding and cutting, solid state welding, ferrous and non-ferrous materials, oxidation-reduction reactions, welding metallurgy, welding processes and heat treating, structural design, safety, and applicable codes and standards.

Institution	Address	City	URL
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Wasington County Community College	One College Drive	Calais	www.wccc.me.edu

Maine Statewide Promotion Opportunities for Maintenance Workers, Machinery

O*NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings
49-9043.00	Maintenance Workers, Machinery	100	1	290	$34,100.00	$0.00	-17%	5
51-4121.06	Welders, Cutters, and Welder Fitters	91	2	1,610	$38,030.00	$3,930.00	7%	49
49-9044.00	Millwrights	90	3	830	$41,280.00	$7,180.00	-12%	11
49-3051.00	Motorboat Mechanics	88	3	240	$34,980.00	$880.00	6%	8

47-5021.00	Earth Drillers, Except Oil and Gas	88	3	140	$37,470.00	$3,370.00	2%	4
49-9041.00	Industrial Machinery Mechanics	88	3	990	$39,370.00	$5,270.00	7%	25
51-4034.00	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	88	3	110	$34,350.00	$250.00	-9%	2
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	87	3	1,180	$34,210.00	$110.00	6%	34
47-2011.00	Boilermakers	87	4	60	$39,260.00	$5,160.00	12%	3
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	87	4	880	$37,010.00	$2,910.00	5%	22
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	86	3	440	$49,450.00	$15,350.00	-19%	15
49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment	85	3	130	$35,960.00	$1,860.00	4%	4
51-4111.00	Tool and Die Makers	85	3	160	$51,670.00	$17,570.00	-11%	2
47-4021.00	Elevator Installers and Repairers	84	4	0	$50,960.00	$16,860.00	0%	0
51-4041.00	Machinists	84	3	1,860	$41,560.00	$7,460.00	4%	35

Top Industries for Welders, Cutters, and Welder Fitters

Industry	NAICS	% in Industry	Employment	Projected Employment	% Change
Architectural and structural metals manufacturing	332300	11.33%	46,347	52,658	13.62%
Agriculture, construction, and mining machinery manufacturing	333100	6.36%	26,009	25,834	-0.67%
Self-employed workers, primary job	000601	5.26%	21,505	24,372	13.33%
Motor vehicle body and trailer manufacturing	336200	5.12%	20,924	21,779	4.09%
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	4.38%	17,916	20,168	12.57%
Other general purpose machinery manufacturing	333900	3.83%	15,672	15,050	-3.97%

Boiler, tank, and shipping container manufacturing	332400	3.10%	12,686	12,161	-4.14%
Motor vehicle parts manufacturing	336300	3.03%	12,410	10,511	-15.31%
Machine shops	332710	3.03%	12,381	10,895	-12.00%
Other fabricated metal product manufacturing	332900	2.73%	11,163	10,522	-5.74%
Employment services	561300	2.58%	10,544	14,196	34.64%
Ship and boat building	336600	2.51%	10,285	12,246	19.07%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	333400	2.39%	9,762	9,553	-2.14%
Nonresidential building construction	236200	2.03%	8,323	9,921	19.20%
Industrial machinery manufacturing	333200	1.31%	5,341	4,655	-12.85%

Top Industries for Maintenance Workers, Machinery

Industry	NAICS	% in Industry	Employment	Projected Employment	% Change
Local government, excluding education and hospitals	939300	6.40%	5,397	6,063	12.34%
Motor vehicle parts manufacturing	336300	3.89%	3,278	2,610	-20.39%
Plastics product manufacturing	326100	3.16%	2,666	2,826	6.00%
Animal production; primary job	112000	2.73%	2,304	2,043	-11.34%
Animal slaughtering and processing	311600	2.47%	2,079	2,373	14.13%
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	2.36%	1,988	2,104	5.82%
Support activities for air transportation	488100	2.25%	1,897	2,292	20.80%
Coal mining	212100	1.76%	1,483	1,498	0.99%
Pharmaceutical and medicine manufacturing	325400	1.71%	1,439	1,814	26.03%
Colleges, universities, and professional schools, public and private	611300	1.70%	1,437	1,608	11.87%
Fabric mills	313200	1.53%	1,286	908	-29.38%
Commercial and industrial machinery and equipment rental and leasing	532400	1.52%	1,281	1,565	22.19%
Pulp, paper, and paperboard mills	322100	1.49%	1,256	871	-30.64%
Electric power generation, transmission and distribution	221100	1.47%	1,241	1,141	-8.03%
Converted paper product manufacturing	322200	1.39%	1,168	980	-16.08%

